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# THE PLANT DISEASE REPORTER

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THE PLANT DISEASE SURVEY, DIVISION OF MYCOLOGY AND DISEASE SURVEY
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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

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## SOME DISEASES AFFECTING CULTIVATED GUAYULE IN THE SOUTHWEST DURING 1942

John T. Presley

Lloyd[1] in his report published in 1911 writes, "Of vegetable parasites affecting guayule only two are at present known" -- a rust, Puccinia parthenii (Speg.) Arthur, and "seda" or dodder (Cuscuta sp.) The rust causes little damage while dodder is said to be of some economic importance. The report referred to guayule growing in its native habitat in the Chihuahuan desert.

Under the present system of production by the Guayule Emergency Rubber Project all plantings are made from seedlings grown in nurseries. In order to produce the greatest number of plantable seedlings in as short time as possible the seed is sown in nursery beds and the plants are forced by irrigation with over-head sprinkling systems. Field plantings are made on cultivated land and the plants are encouraged by irrigation and cultivation to rates of growth beyond the norm for the shrub as it grows naturally on the desert.

This change in environment and growth rate has exposed the plant to numerous fungous diseases that apparently are of little consequence in the native habitat of the plant.

### Diseases of Nursery Plants

Damping-off is one of the first diseases to become apparent in the nursery. It is caused by a complex of organisms and is most destructive during cool, damp weather in the very early stages of seedling development. Species of Pythium, Rhizoctonia, and Fusarium are the most frequent offenders although the Sclerotinias may contribute if conditions are particularly favorable. The hypocotyl is invaded at or near the ground-line and the seedling wilts rapidly and dies. Pre-emergence damping-off is not uncommon but such damage is usually attributed to poor germination.

Verticillium albo-atrum causes a wilt that affects guayule in all stages of growth. The symptoms of Verticillium wilt are a stunting of the plant; the leaves at the top become a bluish-gray, those lower on the plant may show necrotic areas and die back from the margins, and internally the plant shows typical vascular discoloration when cut longitudinally. Plants severely infected by the wilt fungus may be killed in the seedling stage, others that carry infection in a mild form are overlooked in the culling process and are planted in the field. After planting, when conditions are again favorable, the fungus becomes active and often kills the plant during the first or second year after transplanting. Owing to the nature of the fungus, wilt is likely to be more of a problem in the cooler areas of the States in which guayule is grown. Wilt is serious because its action is not confined to any particular stage of growth but will continue its damage even after the plant has been in the field for some years.

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1 Lloyd, Francis Ernest, GUAYULE (Parthenium Argentatum Gray) A RUBBER PLANT OF THE CHIHUAHUAN DESERT. Carnegie Institution of Washington, 1911.

Crown-rot may become serious where excessive watering is practiced in the nursery. The disease is caused by the water molds Pythium and Phytophthora. The heavier soils seem to favor the development of the disease because of slow drainage following an irrigation. The fungus attacks the plant at or just above the ground line and causes a progressive blackening and necrosis accompanied by a wet rot. The plant succumbs as soon as the rot has entirely encircled the crown. Early stages of the disease are indicated by small sunken lesions at the ground line near a leaf scar or at the base of a branch. As the lesion enlarges there is a sudden wilting of the entire top of the plant.

Sclerotinia rot or "cottony rot" is caused by Sclerotinia sclerotiorum. The crowded, succulent guayule seedlings are very susceptible to this rot when a period of cool damp weather occurs. Infection may take place from ascospores or from vegetative mycelium growing in the soil. If the infection is from ascospores the lower branches and leaves are the first to show symptoms, but the vegetative mycelium in the soil generally attacks the main body of the plant at the ground line. The cottony white mycelium rapidly covers the lower branches and main stalk of the plant causing a soft-rot which destroys the cortex. The fungus spreads from plant to plant by contact or by growing along the surface of the ground, and from a single point of infection dozens of plants may be destroyed within 48 hours.

Botrytis rot is caused by the botrytis stage (asexual fruiting stage) of a Sclerotinia and has an action similar to cottony rot; however, in the case of Botrytis rot the infected leaves, branches, and main stalk of the plant soon become covered by a grayish, coarse mycelium which bears the conidia or asexual spores of the fungus. Spread in the nursery during cool damp weather is extremely rapid, by contact and by the spores which are borne in great abundance.

## Diseases of Plants in the Field

Considerable loss from various diseases has occurred in the experimental plantings of guayule made under field conditions. Much of the loss resulted from infected plants that did not survive the transplanting operation. Plants carrying spores or vegetative mycelium from the nursery are often destroyed in transit, especially if the packing material is excessively moist. Sclerotinia rot was especially destructive and under favorable conditions destroyed most of the plants in a shipping box. Culling of the plants prior to planting eliminated much of the diseased material but a good percentage escaped and was planted.

Sclerotinia probably destroyed more plants immediately after transplanting than any other fungus, that is if the plants carried infection when planted. This fungus requires excessive soil moisture and high humidity for its rapid growth, hence after a field planting becomes established no appreciable damage need be expected from field infection. Isolated plants may be attacked and killed but the possibility of damage such as is encountered in the nursery is extremely remote.

Verticillium wilt may cause appreciable damage to field plantings. This damage can result from plants carrying infection when planted and from new infection arising from infested soil. Areas known to be heavily infested by the wilt fungus should be avoided when planting sites are being selected.

Crown rot may assume serious proportions in field plantings even after the plants have become well established. The greatest mortality has occurred in fields located in the regions of higher temperatures and where flood irrigation or row irrigation to saturation has been practiced. Field observations indicate that careful watering will greatly reduce the loss from crown rot. The damage in the field is similar to that in the nursery. Sometimes a cut branch will be the initial point of attack and the infection spreads downward to the main stalk of the plant, but the attack may also come at the base of a branch or leaf scar near the ground line. As soon as the fungus invades the entire crown of the plant a sudden wilting takes place and the plant dies. Two fungi, Pythium and Phytophthora, seem to be responsible for crown rot in the field as well as in the nursery.

The Texas root rot fungus [Phymatotrichum omnivorum], which was considered a potentially serious menace, has thus far caused no damage to the experimental guayule plantings. Inoculation experiments have failed to produce the disease under laboratory or field conditions.

Sclerotium rolfsii is a virulent pathogen on a number of cultivated plants in the Southwest, hence information on the susceptibility of guayule to this fungus is important. Since no information on Sclerotium rolfsii was available from our field plantings of guayule, a laboratory inoculation test was made in July, 1942. The test showed that guayule plants were destroyed by Sclerotium rolfsii. To further verify these findings a second test was made in December, 1942. Steam-sterilized soil was placed in 8-inch pots and inoculated with pure cultures of Sclerotium rolfsii growing on barley. Guayule plants received from the Salinas nursery were placed in inoculated soil as well as in sterile soil that had received no inoculum. Eight days later the first signs of distress were noticed in some of the plants in the inoculated pots. These plants were removed and found to be partially covered by a dense white mycelium that was destroying the cortex of the roots. The mycelium was removed, the plants surface-sterilized and platings made from portions of the roots. These platings yielded pure cultures of Sclerotium rolfsii. Within 2 weeks all of the plants in the inoculated pots were dead or seriously affected while the plants in the checks remained healthy and continued to grow vigorously. The roots of the inoculated plants were found to be covered by sclerotia and mycelial strands of the fungus and in some instances the cortex was completely destroyed up to the ground line. From these tests it is evident that Sclerotium rolfsii is capable of attacking and destroying guayule plants and must be considered a potential menace to field plantings. Heavily infested soil should be avoided where possible.

(GUAYULE RESEARCH PROJECT, U. S. BUREAU OF PLANT INDUSTRY).

## DISEASES IN MASSACHUSETTS IN 1942

O. C. Boyd

Definite goals have been established in this State for 1943 in the production of the food crops, vegetables, potatoes and fruits, and for tobacco, feed, and forage crops as well. All such farm crops are troubled every year

by their respective diseases which must be adequately controlled if production quotas are to be realized.

Diseases are responsible for crop losses primarily through (1) depressed yields, and (2) reduced quality either in the field or in storage. In view of the already existing problems of scarcity and high costs of labor, fertilizer, machinery and supplies in general, it becomes all the more urgent that farmers produce maximum yields per acre of high-quality produce in order to help reduce the cost of production per ton, bushel or box. The control of diseases does contribute directly to increased yields and higher quality.

1943 May Be a Critical Year for Disease Control: There are two principal factors that govern the behavior of diseases and determine the amount of losses from them: (1) the character of the weather during the growing season (dryness or wetness with accompanying temperature), and (2) the extent of carryover of the disease organisms on the seed or on the living plant or plant refuse from the preceding year's infections. A wet season following a light carryover, such as occurred in many crops in 1942, is likely to be more dangerous than a moderate or heavy carryover followed by a dry season. The most dangerous setup, of course, is a moderate to heavy carryover of disease organisms followed by a wet season.

In view of the wide distribution and the severity of many crop diseases last year, the seasonal carryover this year is unusually heavy; and, if a moderately wet or unusually wet spring or summer is encountered in 1943, we might expect some really difficult problems in disease control unless reasonable precautionary steps are taken. It is the early-season control practices, whether with fruits, vegetables, tobacco, potatoes, or others, that are the least expensive and easiest to apply and often the most important in the season's control program. Taking early-season preventative measures should assist materially in the year's control program and should thus contribute favorably to our production goals.

## Fruits

Orchard Fruits: Last year, the following diseases were more pronounced than usual: Scab, cedar rusts and sooty blotch of apple; also bitter rot and black pox in Bristol and Plymouth Counties; brown rot of stone fruits, shot-hole leaf blights of plum and cherry, and scab and bacterial spot of peach; scab and the 2 common leafspot diseases of pears. [Venturia inaequalis, Gymnosporangium spp., Gloeodes pomigena; Glomerella cingulata, Helminthosporium papulosum; Monilinia fructicola, Coccomyces spp., Cladosporium carpophilum, Xanthomonas pruni; Venturia pyrina, Mycosphaerella sentina, Fabraea maculata].

Small Fruits: Both spur blight and the common leaf- and cane-spot disease of raspberry are represented by a heavy carryover this winter and should be given careful attention this spring. [Didymella applanata, Mycosphaerella rubi].

Black rot [Guignardia bidwellii] last year caused more damage in garden and commercial plantings of grapes than in several past seasons.

Most common varieties of strawberries are subject to the leafspot disease which was unusually prevalent in new beds last fall. [Mycosphaerella fragariae]. Root-rot troubles, likewise, were outstanding last year in bearing beds as well as the new beds.

## Vegetables

Outstanding Diseases Last Year: In view of the rainy season in 1942, many diseases of vegetable crops were more severe than usual last year, are now overwintering in abundance, and therefore will need to be considered with considerable respect this spring.

Asparagus rust was much more prevalent than usual even on the Washington varieties. However, the Washington varieties underwent only light to moderate infections with no appreciable damage, whereas a few fields of Paradise asparagus in this State were practically ruined by rust. Bean bacterial halo blight, anthracnose, and rust (on Kentucky Wonder); anthracnose causing total loss in Black Valentine on one farm in Plymouth County. Cercospora leaf spot of beets and chard. Although black rot and black leg of crucifers were less pronounced generally than in some past seasons, black rot caused a total loss in one field of late cauliflower in Hampden County in spite of crop rotation by the grower and reported hot water seed treatment by the seedman. [Puccinia asparagi; Pseudomonas medicaginis var. phaseolicola; Colletotrichum lindemuthianum, Puccinia phaseoli var. typica, Cercospora beticola; Xanthomonas campestris; Phoma lingam].

Cabbage yellows, Fusarium conglutinans, though less severe in some parts was more conspicuous in others. It is well established on many farms in Essex County where it caused light to heavy losses in 1941 and light to moderate losses in 1942. Last year heavy infections of this disease were observed for the first time in Middlesex and Hampden Counties, including fields with 25% to 75% of the plants prominently injured. On carrots, both the Cercospora and Macrosporium leaf blights [Cercospora carotae, Alternaria carotae] were more pronounced than usual, the former throughout and the latter during the latter half of the season. Hutchinson and Danvers Half-Long fared better than certain other varieties, while failure to rotate crops appeared to be the outstanding predisposing factor. Aster yellows [virus] was far more damaging to carrots than usual particularly in Essex County.

In celery, both early and late blights [Cercospora apii, Septoria spp.] as well as Rhizoctonia "rusty-root" and aster yellows were outstanding. In both sweet corn and field corn, Helminthosporium leaf blight [H. turcicum] was widespread, though not particularly damaging except late in the season on field corn. Bacterial wilt [Bacterium stewartii] was neither observed nor reported.

Scab was the outstanding disease of cucumbers, muskmelons and summer squash, and was common on stored winter squashes. Angular leaf-spot likewise was unusually pronounced on cucumbers but less so than in 1942, while anthracnose and bacterial wilt were about "normal". [Cladosporium cucumerinum, Pseudomonas lachrymans, Colletotrichum lagenarium, Erwinia tracheiphila].

Verticillium wilt in eggplant [V. albo-atrum] was severe in a few instances where the crop followed tomatoes or potatoes. Lettuce bottom rot [Corticium solani] and drop [Sclerotinia sp.] as well as aster yellows were pronounced, also onion blast [nonpar.] and bacterial soft rot of bulbs in the field following Fusarium root and bulb rots and following removal of seed-stalks.

Parsnip Ramularia [R. pastinacae] and Cercospora [C. pastinacae] leaf spots were prevalent, also pea powdery mildew [Erysiphe polygoni] and

root-rots of various kinds; bacterial leaf and fruit spot of peppers [Xanthomonas vesicatoria], as well as a mosaic [virus] on edible soybeans.

On stored squash, Mycosphaerella black rot [M. citrullina] and Fusarium rots were the most outstanding causes of decay, though scab, as well as decays due to the bacterial wilt organism and to various molds were common. In general though, losses from storage rots were lighter than in most past storage seasons. The source of a heavy loss from black rot in one squash storage house last year was traced directly to manure from cows fed cull squashes. A shovelful of manure was placed in each hill in the field before planting. On another farm, an unusual loss due to decay from both black rot and Fusarium rot occurred in a stored crop that was raised in a field where hogs were fed cull squash the preceding year. In tomatoes, both early blight and Septoria leaf spot were unusually prevalent from late July on, also Fusarium wilt which caused marked losses on several farms and particularly in many home gardens; and Phytophthora late blight appeared early (first week of August) and was more widespread and damaging during August and September than it has been for several years. [Alternaria solani, Septoria lycopersici, F. bulbigenum lycopersici, P. infestans]. (MASSACHUSETTS STATE COLLEGE).

## PLANT DISEASES AND INJURIES IN ARKANSAS IN 1942

V. H. Young

Peanut Diseases: Due to war requirements, the acreage of peanuts planted in Arkansas in 1942 was 3-1/2 times as great as the 1941 acreage. Franklin County in the western part of the Arkansas River Valley was the area most extensively planted to peanuts but there were scattered plantings all over the State. In Franklin County, peanuts have been planted for many years in rotation with cotton on sandy soils where rootknot and Fusarium wilt are serious.

Much of the seed planted appears to have been of rather poor quality and since no seed treatments were used, poor stands were common. So far as could be ascertained, Cercospora leafspot was present in practically every planting in the State but it appears to have been severe only where peanuts had been grown previously. Most of the peanuts planted in the State were on land not in peanuts in 1941 and it is believed that no serious loss occurred in such cases. Where leafspot was severe, nuts filled poorly and defoliation was severe. One field visited in mid-August was found to have already lost 20% of its leaves and the remaining leaves were severely spotted.

No disease control measures were employed in the State in 1942 but for 1943 seed treatment is being recommended, especially for machine-shelled seed and dusting with 325 mesh conditioned dusting sulfur is being recommended for leafspot control in plantings made on land which was in peanuts in 1941. In general we are recommending that peanuts be not planted on the same land 2 years in succession where this is feasible.

Cotton Diseases: The average yield of seed cotton in Arkansas in 1942 was 361 lbs. per acre, the highest yield on record. The next highest yield was in 1940 with an average yield of 349 lbs. of seed cotton, and the third

highest yield was in 1941 with 340 lbs. per acre. The average yield for the 10-year period 1931-1941 was 259 lbs. of seed cotton per acre. These facts in themselves are pretty good evidence that weather conditions were unusually favorable for cotton in 1942 and that neither diseases nor insect pests were serious factors in reducing 1942 yields.

Weather conditions in late April and early May were wet and cool and much of the planting seed used was comparatively low in germinating power. As a result, much replanting was necessary. However, the evidence was conclusive that Ceresan-treatment frequently made replanting unnecessary and that stands were greatly improved whenever seed treatments were used. A considerable amount of machine-delinted seed was planted in 1942 and a small acreage was planted to acid-delinted seed. In 1941, acid-delinted seed was used by a number of growers but results were not sufficiently outstanding to induce them to continue its use. There is a general feeling among growers and extension workers that treatment with Ceresan, which has become very common in recent years, is one of the factors which has resulted in much better cotton yields in the past 3 years.

Information secured from the County Agents in all counties of the State where cotton is grown, indicates that the percentage of cotton seed treated varies from 95 in the better cotton counties to 5 in a few counties where cotton is a very minor crop. It is very evident that the growers who have the greatest stake in the cotton growing business are the ones who recognize the value of cotton seed treatments.

Anthracnose [Glomerella gossypii] and angular leafspot [Xanthomonas malvacearum] have generally been of minor importance in Arkansas in recent years. Evidence from experimental plantings is that the low incidence of angular leafspot may be in part at least the result of increased use of cotton seed treatments.

Fusarium wilt [F. vasinfectum] of cotton was of less importance than usual in 1942, although it was found to be severe in certain very sandy areas. In one of these areas in parts of Lawrence and adjacent counties, farmers have found that it is possible to grow Rhyne Cook cotton where ordinary varieties are a total failure. However, the shortness of staple characteristic of this variety makes it undesirable for large scale planting and a highly resistant variety with a staple of an inch or more is badly needed.

Snap Bean Diseases: The acreage of green beans for canning was probably greater in 1942 than ever before. Conditions for the development of anthracnose [Colletotrichum lindemuthianum] in the spring crop were very favorable but little damage occurred except in home gardens. Large plantings apparently were generally of western-grown bean seed, whereas small garden plots were planted with packet seed which experience has shown frequently carries anthracnose. An inquiry directed to one of the large dealers in packet seeds enclosing an empty carton which had contained anthracnose-bearing bean seed, failed to elicit a statement that the seed was not eastern-grown. Experience in this State has shown the advisability of using nothing but western-grown bean seed.

Spinach Freezing Injury: Spinach production is largely confined to a few comparatively limited areas in Arkansas, perhaps the most important of which is the Van Buren - Fort Smith area of the western Arkansas River Valley. Unusually severe (below zero) weather in late January is said to have caused losses valued at more than $500,000 in this one area.
(ARKANSAS AGRICULTURAL EXPERIMENT STATION).

## IRON DIMETHYL DITHIOCARBAMATE - A POSSIBLE SUBSTITUTE FOR BORDEAUX MIXTURE FOR THE CONTROL OF APPLE BLOTCH

John C. Dunegan

In 1941 Goldsworthy, Green and Smith[1] sprayed apple trees in Maryland and Missouri with iron (ferric) and lead dimethyl dithiocarbamates. These materials produced no injury to the trees and controlled the apple scab fungus under the conditions prevailing in 1941.

In 1942 ferric dimethyl dithiocarbamate was applied to a block of Ben Davis apple trees at Fayetteville, Arkansas. The material was used at the rate of 1-1/2 lbs. to 50 gals. for 6 consecutive spray applications and its effectiveness was compared with that of similarly timed applications of lime sulfur solution for scab control and of Bordeaux mixture for apple blotch control.

Less than 1% of the fruit on the ferric dimethyl dithiocarbamate and on the lime sulfur plots, respectively, developed scab lesions. This test was not a crucial one, however, since scab lesions developed on only 18% of the fruit on the non-sprayed check plot.

The results obtained in the control of the blotch fungus are more significant. Blotch lesions developed on 40.8% of the non-sprayed fruit, but less than 0.1% of the fruit sprayed with ferric dimethyl dithiocarbamate, and 0.3% of the fruit sprayed with 2-4-50 Bordeaux mixture was similarly affected. This satisfactory control of apple blotch in 1942 with ferric dimethyl dithiocarbamate suggests the possibility, if these preliminary results are confirmed by future experiments, that this material can be used as a substitute for copper sulfate in apple blotch control.

(DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES, U. S. AGRICULTURAL RESEARCH ADMINISTRATION, BUREAU OF PLANT INDUSTRY, IN COOPERATION WITH ARKANSAS AGRICULTURAL EXPERIMENT STATION).

## NUT DISEASES IN THE PACIFIC NORTHWEST IN 1942

P. W. Miller

### Persian Walnut Diseases

Walnut bacteriosis (due to Phytomonas juglandis (Pierce) Bergey et al. [Xanthomonas]) was widely distributed and unusually severe in the Pacific Northwest in 1942. Its epidemic development was associated with numerous prolonged periods of rainfall during the infection period. It is estimated that, on the average, approximately 40% of the potential walnut crop in unsprayed orchards in the Pacific Northwest was either completely destroyed or the quality adversely affected by this disease. In certain sections in Oregon, losses from bacteriosis were exceptionally severe, ranging upwards to 75%.

Ringspot (due to Ascochyta juglandis Bolt.) occurred on the foliage of Persian walnuts in a number of widely scattered orchards in Oregon. It

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1 Goldsworthy, M. C., E. L. Green, and M. A. Smith. The fungicidal and phytocidal properties of some metallic alkyl-dithiocarbamates. Phytopath. 32: 6. 1942.

was of only minor economic importance, however, as it caused but little defoliation.

Downy spot (due to Microstroma juglandis (Berng.) Sacc.) occurred in limited amounts on leaves of Persian walnuts in a number of orchards widely distributed in western Oregon. It was of no economic importance as the lesions were not sufficiently abundant per leaf infected to cause any significant decrease in the functional leaf area.

Mushroom root rot (due to Armillaria mellea (Vahl.) Quel.). Trees affected with this disease were found in a number of walnut orchards widely distributed in Oregon. However, only a comparatively small percentage, estimated at less than 5%, of the walnut trees dying in 1942 succumbed to this malady.

Leaf scorch (non-parasitic) was widely distributed in the Pacific Northwest in 1942, occurring in greater or less amounts in practically all walnut-growing districts in Oregon and Washington. In some orchards, located on certain soil types, it was of considerable economic importance as it caused a significant decrease in the functional leaf area and premature defoliation. In general, however, it was neither so prevalent nor so severe in 1942 as in 1940 or 1941.

"Freckle-spot" (non-parasitic) occurred on the foliage of Persian walnuts in widely scattered orchards in western Oregon. It was of no economic importance, however, as it caused no significant decrease in the functional leaf area and did not result in premature defoliation.

Sunscald (non-parasitic). Abnormally high temperatures occurring in the Pacific Northwest during the summer of 1942 caused appreciable damage to the walnut crop in certain sections. In some of the more badly affected orchards, it is estimated that as much as 10% of the crop was destroyed by the injurious effects from the heat. In addition, the quality of a considerable percentage of the crop was adversely affected, the kernels being partly shrivelled or the pellicles developing an amber or dark-brown color.

"Black-line" (girdle) of grafted walnuts (non-parasitic). This disorder was responsible for the death of an estimated 75% of the grafted walnut trees that died in Oregon during 1942. The affected trees belonged to the Vrooman Franquette variety grafted either on California black walnut rootstocks (Juglans hindsii Sarg.) or on hybrids of this with other species. It is noteworthy that this disorder has so far never been found affecting the same variety grafted on Persian walnut seedling rootstocks.

Collar or root-crown rot (non-parasitic). A collar or root-crown rot, due to water standing around the crowns, caused the death of a number of Franquette walnut trees, grafted on California black walnut rootstocks or on hybrids of other species with this one, in an irrigated orchard near Eugene, Oregon.

Dieback (non-parasitic). A dieback of twigs and branches was prevalent in a number of widely distributed orchards in Oregon in 1942. In general, this disorder was more prevalent in orchards located on "marginal" soils of the "heavier" type.

## Filbert Diseases

Bacterial-blight (due to Phytomonas corylina Miller et al. [Xanthomonas] was widely distributed in Oregon in 1942. However, it was not generally so

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Mushroom root rot (due to Armillaria mellea (Vahl.) Quel.). Trees affected with this disease were found in a number of walnut orchards widely distributed in Oregon. However, only a comparatively small percentage, estimated at less than 5%, of the walnut trees dying in 1942 succumbed to this malady.

Leaf scorch (non-parasitic) was widely distributed in the Pacific Northwest in 1942, occurring in greater or less amounts in practically all walnut-growing districts in Oregon and Washington. In some orchards, located on certain soil types, it was of considerable economic importance as it caused a significant decrease in the functional leaf area and premature defoliation. In general, however, it was neither so prevalent nor so severe in 1942 as in 1940 or 1941.

"Freckle-spot" (non-parasitic) occurred on the foliage of Persian walnuts in widely scattered orchards in western Oregon. It was of no economic importance, however, as it caused no significant decrease in the functional leaf area and did not result in premature defoliation.

Sunscald (non-parasitic). Abnormally high temperatures occurring in the Pacific Northwest during the summer of 1942 caused appreciable damage to the walnut crop in certain sections. In some of the more badly affected orchards, it is estimated that as much as 10% of the crop was destroyed by the injurious effects from the heat. In addition, the quality of a considerable percentage of the crop was adversely affected, the kernels being partly shrivelled or the pellicles developing an amber or dark-brown color.

"Black-line" (girdle) of grafted walnuts (non-parasitic). This disorder was responsible for the death of an estimated 75% of the grafted walnut trees that died in Oregon during 1942. The affected trees belonged to the Vrooman Franquette variety grafted either on California black walnut rootstocks (Juglans hindsii Sarg.) or on hybrids of this with other species. It is noteworthy that this disorder has so far never been found affecting the same variety grafted on Persian walnut seedling rootstocks.

Collar or root-crown rot (non-parasitic). A collar or root-crown rot, due to water standing around the crowns, caused the death of a number of Franquette walnut trees, grafted on California black walnut rootstocks or on hybrids of other species with this one, in an irrigated orchard near Eugene, Oregon.

Dieback (non-parasitic). A dieback of twigs and branches was prevalent in a number of widely distributed orchards in Oregon in 1942. In general, this disorder was more prevalent in orchards located on "marginal" soils of the "heavier" type.

## Filbert Diseases

Bacterial blight (due to Phytomonas corylina Miller et al. [Xanthomonas] was widely distributed in Oregon in 1942. However, it was not generally so

prevalent or severe as in 1940 or 1941. Tree losses from this disease in young orchards, 1 to 3 years of age, ranged from less than 1 up to 15%. In general, however, the estimated average loss did not exceed more than 5%. While no trees over 5 years of age were known to have been killed by this disease, it did cause the death of many potential pistillate-flower bearing buds and nut-bearing twigs and branches, and this indirectly reduced the crop. In certain badly infected orchards, it is estimated that bacterial blight caused an indirect loss of as much as 25% of the crop, though the average loss therefrom probably did not exceed 5% of the total crop.

Brown mildew (due to Phyllactinia corylea (Pers.) Karst.) was widely distributed in Oregon during the late summer and fall of 1942. However, it was apparently of no economic importance as the infected leaves retained their normal green color through the season and persisted on the trees to the time of normal leaf fall. It is believed that the lateness of the attack was responsible for the small amount of damage that seemingly occurred.

Leaf scald (non-parasitic) was widely distributed in Oregon in 1942, occurring in greater or less amounts in practically all filbert orchards in the State. However, it was not generally so prevalent or severe as in 1941. Where the disorder was severe, though, it was of considerable economic importance as it caused a significant decrease in the functional leaf area and, in many cases, a premature shedding of the leaves. There appears to be a relationship between soil depth and occurrence of this trouble as orchards located on relatively shallow soils with limited reserves of moisture were, in general, more severely affected than plantings located on deep soils with correspondingly larger reserves of moisture.

Brown-stain (non-parasitic) was present in only very limited amounts in most orchards in the Pacific Northwest in 1942. It is estimated that not more than 0.5% of the total 1942 filbert crop was so affected.

"Blanks" (non-parasitic). This disorder, which is characterized by a failure of the embryo to develop, was widely distributed in the Pacific Northwest in 1942. However, it was generally less prevalent than in 1941. It is estimated that, on the average, the loss from this disorder did not exceed 10% of the crop.

Sunscald (non-parasitic). The occurrence of abnormally high temperatures in the Pacific Northwest during the summer months caused the development of heat cankers on the trunks of a number of young filbert trees, 1 to 3 years of age, and their subsequent death. Losses from this trouble were much greater in orchards in which the young trees were not protected by trunk protectors.

(DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES, U. S. AGRICULTURAL RESEARCH ADMINISTRATION, BUREAU OF PLANT INDUSTRY).

## GRASS DISEASES IN KENTUCKY IN 1942

John R. Hardison

This preliminary report is based on specimens collected after September 21, primarily at the Experiment Station farm and in the general vicinity of Lexington, Kentucky. The bends disease was found on Bromus inermis and Festuca elatior, thus recording this interesting disease for the first time in this area. Anthracnose (Colletotrichum graminicolum)

was fairly severe on Dactylis glomerata but was less serious on other grasses. During the period of September to November the most serious diseases of Poa pratensis were leafspot (Septoria macropoda var. septulata) and leaf rust (Puccinia poae-sudeticae). Leafspot (Helminthosporium vagans) was fairly severe on certain clonal lines of Poa pratensis, and considerable leaf yellowing of this grass was found to be associated with infections of Septoria oudemansii. Stagonospora bromi was much less serious on Bromus inermis than was reported in Michigan in 1941 [1].

The writer is indebted to Dr. Roderick Sprague for identification of certain of the Fungi Imperfecti and to Mr. Jason R. Swallen for identification of some of the grass hosts.

Agropyron smithii Rydb.
Leaf rust, Puccinia rubigo-vera. Also with rust parasite, Darluca filum.

Agropyron trichophorum (Link) Richt.
Leaf rust, Puccinia rubigo-vera

Agrostis alba L.
Crown rust, Puccinia coronata, with rust parasite, Darluca filum
Stem rust, Puccinia graminis

Andropogon furcatus Muhl.
Anthracnose, Colletotrichum graminicolum

Andropogon hallii Hack.
Anthracnose, Colletotrichum graminicolum

Andropogon scoparius Michx.
Anthracnose, Colletotrichum graminicolum

Arrhenatherum elatius (L.) Mert. & Koch.
Leaf stripe, Scolecotrichum graminis

Bromus catharticus Vahl
Leafspot, Stagonospora bromi

Bromus inermis Leyss.
Bends, cause undetermined
Ergot, Claviceps purpurea
Leafspot, Ascochyta graminicola
Leafspot, Helminthosporium bromi
Leafspot, Stagonospora bromi

Bromus marginatus Nees
Leafspot, Helminthosporium bromi

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1 Hardison, John R. Grass diseases in Michigan in 1941. Plant Disease Reporter 26 (3): 67-75. 1942.

Buchloë dactyloides (Nutt.) Engelm.
Leafspot, Helminthosporium sp.

Cortaderia selloana (Schult.) Aschers. & Graebn.
Leafspot, Phyllosticta sp.

Dactylis glomerata L.
Anthracnose, Colletotrichum graminicolum
Purple leafblotch, Stagonospora arenaria
Leaf rust, Uromyces dactylidis
Leaf stripe, Scolecotrichum graminis
Powdery mildew, Erysiphe graminis
Stem rust, Puccinia graminis
Stripe smut, Ustilago striaeformis

Digitaria sanguinalis (L.) Scop.
Head smut, Ustilago rabenhorstiana

Digitaria violascens Link
Phyllosticta sp.

Echinochloa crusgalli (L.) Beauv.
Leaf spot, Epicoccum sp.

Eleusine indica (L.) Gaertn.
Leaf spot, Helminthosporium leucostylum

Elymus canadensis L.
Leaf rust, Puccinia rubigo-vera, with parasite, Darluca filum
Leafspot, Stagonospora arenaria

Eragrostis cilianensis (All.) Link
Leafspot, Helminthosporium rostratum

Festuca elatior L.
Anthracnose, Colletotrichum graminicolum
Bends, cause undetermined
Crown rust, Puccinia coronata
Ergot, Claviceps purpurea
Leafspot, Helminthosporium dictyoides
Stem rust, Puccinia graminis

Lolium multiflorum Lam.
Crown rust, Puccinia coronata
Ergot, Claviceps purpurea

Lolium perenne L.
Crown rust, Puccinia coronata

Muhlenbergia schreberi Gmel.
Leaf rust, Puccinia schedonnardi

Paspalum pubescens Muhl.
Leaf rust, Puccinia substriata, with rust parasite, Darluca filum

Phleum pratense L.
Leafspot, Heterosporium phlei
Leaf stripe, Scolecotrichum graminis
Stripe smut, Ustilago striaeformis

Poa champaniana Scribn.
Stripe smut, Ustilago striaeformis

Poa pratensis L.
Anthracnose, Colletotrichum graminicolum
Leaf eye spot, Helminthosporium vagans
Leaf rust, Puccinia poae-sudeticae with and without rust parasite, Darluca filum
Leafspot, Septoria macropoda var. septulata
Leafspot, Septoria oudemansii
Powdery mildew, Erysiphe graminis
Stripe smut, Ustilago striaeformis

Setaria lutescens (Weigel) F. T. Hubb.
Leafspot, Piricularia grisea
Leafspot, Cercospora setariae

Stipa robusta Scribn.
Leafspot, Helminthosporium sp.

## PATHOGEN INDEX

### Cause Undetermined

Bends
Bromus inermis
Festuca elatior

### Ascomycetes

Claviceps purpurea (Fr.) Tul.
Bromus inermis
Festuca elatior
Lolium multiflorum

Erysiphe graminis DC.
Dactylis glomerata
Poa pratensis

### Fungi Imperfecti

Ascochyta graminicola Sacc.
Bromus inermis

Cercospora setariae Atk.
Setaria lutescens

Colletotrichum graminicolum (Ces.) Wils.
Andropogon furcatus
Andropogon hallii
Andropogon scoparius

Fungi Imperfecti cont.

Colletotrichum graminicolum (Ces.) Wils. cont.
Dactylis glomerata
Festuca elatior
Poa pratensis

Darluca filum (Biv.) Cast.
With Puccinia poae-sudeticae on:
Poa pratensis

With Puccinia rubigo-vera on:
Agropyron smithii
Elymus canadensis

With Puccinia substriata on:
Paspalum pubescens

Epicoccum sp.
Echinochloa crusgalli

Helminthosporium bromi Died.
Bromus inermis
Bromus marginatus

Helminthosporium dictyoides Drechs.
Festuca elatior

Helminthosporium leucostylum Drechs.
Eleusine indica

Helminthosporium rostratum Drechs.
Eragrostis cilianensis

Helminthosporium vagans Drechs.
Poa pratensis

Helminthosporium sp.
Stipa robusta

Heterosporium phlei Greg.
Phleum pratense

Phyllosticta sp.
Cortaderia selloana
Digitaria violascens
Muhlenbergia schreberi

Piricularia grisea (Ske.) Sacc.
Setaria lutescens

Scolecotrichum graminis Fckl.
Arrhenatherum elatius
Dactylis glomerata
Phleum pratense

Septoria macropoda var. septulata (Gz. Fr.) Spr.
Poa pratensis

Septoria oudemansii Sacc.
Poa pratensis

Stagonospora arenaria Sacc.
Dactylis glomerata
Elymus canadensis

Stagonospora bromi Sm. & Ramsb.
Bromus catharticus
Bromus inermis

Ustilaginales

Ustilago rabenhorstiana Kühn
Digitaria sanguinalis

Ustilago striaeformis (Westd.) Niessl
Dactylis glomerata
Phleum pratense
Poa champaniana
Poa pratensis

Uredinales

Puccinia coronata Cda.
Agrostis alba
Festuca elatior

Puccinia coronata Cda. cont.
Lolium multiflorum
Lolium perenne

Uredinales cont.

Puccinia graminis Pers.
Agrostis alba
Dactylis glomerata
Festuca elatior

Puccinia poae-sudeticae (Westend.) Jørstad
Poa pratensis

Puccinia rubigo-vera (DC.) Wint.
Agropyron smithii
Agropyron trichophorum

Puccinia rubigo-vera cont.
Elymus canadensis

Puccinia schedonnardi Kellerm. & Sw.
Muhlenbergia schreberi

Puccinia substriata Ellis & Barth.
Paspalum pubescens

Uromyces dactylidis Otth.
Dactylis glomerata

(KENTUCKY AGRICULTURAL EXPERIMENT STATION, LEXINGTON, KENTUCKY).

## NOTES ON CORN DISEASES IN CERTAIN SOUTHERN STATES IN 1942

George Y. Young

A preliminary survey of corn diseases was started on August 26 and concluded on September 15, 1942. The trip was made by automobile through Virginia, North Carolina, Tennessee, and Mississippi. The trip from Washington, D. C., to State College, Miss., was made in company with Dr. M. T. Jenkins, Principal Agronomist in Charge of Corn Investigations, and in Mississippi in company with Dr. J. A. Pinckard, Plant Pathologist, and Mr. W. H. Freeman, Associate Agronomist, Mississippi Agricultural Experiment Station.

In North Carolina and Tennessee, the survey was confined to corn in the experimental corn breeding plots at the Upper Coastal Plains Experiment Station, Rocky Mount, N. C.; the Piedmont Station, Statesville, N. C.; the Mountain Station, Swannanoa, N. C.; the Tennessee Experiment Station, Knoxville, Tenn.; and the Middle Tennessee Station near Columbia, Tenn.

In Mississippi, the survey included several fields of commercial corn, in addition to detailed examination of corn breeding plots at State College, Raymond, Natchez, and Poplarville. En route to these stations, stops were made in the following counties: Oktibbeha, Choctaw, Winston, Neshoba, Scott, Rankin, Hinds, Claiborne, Jefferson, Adams, Franklin, Pike, Pearl River, Forrest, Jones, Clarke, Lauderdale, Kemper, Noxubee, and Lowndes. In all, 23 fields of commercial corn and 214 inbred lines, hybrids, and varieties were examined.

For a survey of corn diseases in the Southern States, a tour earlier in the season probably would have proved more fruitful, for even in Virginia, most of the corn was more advanced in maturity than the corn in the vicinity of Beltsville, Md., where much of the corn was still in the pollinating stage during the last week of August. In fact, the corn in many fields in Virginia was already in the shock, and farther south much of the corn was fully mature. Naturally, corn in this stage is not at its best for pathological survey. In the corn-breeding plots, however, and in many fields

farther south, there were enough late varieties to permit a reasonable estimate of the kinds of diseases present and their effects.

In Virginia, one stop was made in Greenville County in a mature field of corn where more than 30% of the stalks were down. The stalks were broken or bent over at or near one of the lower nodes of the plant, with Fusarium symptoms prominent at the node and in the pith in the immediate vicinity of the break, but probably Diplodia zeae also played a large role in rotting the stalk.

At all the experiment stations visited and in all fields of corn examined, unmistakable symptoms of severe bacterial wilt (Bacterium stewartii E.F. Sm.) were much in evidence, especially in some inbred lines and in progenies of such lines. For example, inbred lines ITE 701 and CI 6, and crosses of these 2 lines, at Beltsville, Md., and in all stations visited, were severely attacked by bacterial wilt.

Lesions of Helminthosporium turcicum Pass. on the leaves were prevalent also but not quite so widespread as the leafspot caused by Cochliobolus heterostrophus Drechs. Some inbred lines, hybrids, and varieties that showed considerable susceptibility to Helminthosporium turcicum in Mississippi are: Tex. 12; Mo. 70; K 19; Tenn. 10; Funk G 713; and Fla. 11-129. Among those that showed relative resistance are: Miss. 14A; Miss. 39; La. 3813; La. 3802; C 66a; and C 87. Some inbred lines and variety corn that showed high susceptibility to the Cochliobolus leaf spot are: K 55; P 55; R 30; and K 179. Examples of those that showed relative resistance to this disease are: K 64; Mo. 2Rg; Tx 61 M; Mo. 7 Ra; and Fla. White.

Diplodia macrospora Earle was found prevalent in the corn leaves, as well as in the stalks and ears, in many localities in Mississippi, especially in Pike, Clarke, Jones, and Lauderdale Counties. Rust, Puccinia sorghi Schw., was found to be severe on corn in the Southern States, especially in certain localities, and particularly in some inbred lines and varieties of corn. Examples of high susceptibility to rust were inbred lines CI. 3, L 317, Miss. 44, and the variety Paymaster. Several inbreds and strains apparently were immune, such as C 662, K 14, Fla. 4-32, K 8, Mo. 22, T 18C.

The disease that was found most commonly and probably the one that caused the greatest damage to corn in the South was brown spot, Physoderma zeae-maydis Shaw. This disease is so widespread that it was difficult to find a plant of corn entirely free from it, especially in Mississippi. It had attacked the leaves, sheaths, nodes, and stalks. On the sheaths the lesions resembled very closely those caused by "pollen discoloration" or "sheath spot."

In most of the areas visited, stalk rots were the most destructive of the diseases that were attacking corn approaching maturity. Physoderma zeae-maydis, Diplodia spp., and Fusarium sp. are the chief destroyers of the stalks, with Cephalosporium sp. a large contributor in some localities and particularly with certain lines and varieties of corn. Bacterial rotting of the stalk also was found, but did not prove so widespread. In the southern and eastern tiers of counties in Mississippi, the damage due to root rot would probably rank of first importance. In several fields of corn examined in these counties, the dead plants, due to root rot, ranged from 20 to 80%.

With stalk rots, the damage appeared to have started at or near one of the lower nodes of the plant. This resulted in typical symptoms of drought for the upper parts of the plants. These drought symptoms, of course, are

inevitable in such cases, when all physiological connection between the roots and the upper parts of the plant is severed by a rot at any one of the lower nodes. The "drought"-stricken plants were scattered promiscuously among the healthy plants.

Ear rots are probably the most widespread diseases of corn affecting, in different degrees, most inbred lines and probably all variety corn under conditions favorable for these diseases. With ear rots, it was found difficult to associate any one disease with any unusual susceptibility of any inbred line or variety. Some lines appeared free from such diseases, but many of these had good husk protection, which may have served to exclude the fungi.

Except for the ear rots and possibly the brown spot, most of the other diseases appeared to be associated with susceptible inbred lines and with progenies containing susceptible parents. Other lines were resistant to or immune from certain specific diseases. For example, certain lines apparently were immune from bacterial wilt, many apparently were immune from rust, and some apparently were immune from Helminthosporium turcicum. Some lines were especially susceptible to certain diseases. That is, they probably were homozygous for susceptibility.

From all diseases, the loss or reduction in yields and in quality of grain in Mississippi is estimated at 20 to 25% during 1942. The use of resistant inbreds to combine their resistance to the different diseases with other desirable agronomic qualities offers promising possibilities for the development of improved hybrids and strains of corn for the Mississippi and the other Southern States.

(DIVISION OF CEREAL CROPS AND DISEASES, BUREAU OF PLANT INDUSTRY, AGRICULTURAL RESEARCH ADMINISTRATION, U. S. DEPARTMENT OF AGRICULTURE, AND THE MISSISSIPPI AGRICULTURAL EXPERIMENT STATION, STATE COLLEGE, MISSISSIPPI, COOPERATING).

## THE THINNING OF CROTALARIA STANDS IN SOUTHEASTERN UNITED STATES

J. L. Weimer

Several species of Crotalaria are used as summer cover crops in the Southeastern United States. Once these crops have become established they volunteer for a number of consecutive years. In recent years there has been a gradual thinning of many stands, especially after they have been volunteering on a piece of land for 4 or 5 years, thus making it necessary to reseed more frequently or to discontinue growing the crop for a time.

In July 1942 several Crotalaria plantings of different ages at Gainesville, Florida, were inspected in an effort to learn the cause of the thinning of the stands. One plot of Crotalaria intermedia Kotschy was given special attention. What was found there was said to be representative of the trouble noted by others elsewhere.

This particular stand was fairly good in most places and the plants were from 4 to 6 inches tall. Careful examination of the plants, however, showed that a considerable number of them were slightly wilted even though the soil was moist and the humidity high. Other plants were slightly yellowish in color, some were permanently wilted, others dwarfed, and still others were dead. In the earliest stages, denoted by slight wilting of the

tops, no underground symptoms of disease were evident. Later there was a slight browning on the stem just below the surface of the soil or of the upper part of the main root followed by a browning and decay of the fibrous roots and ultimately the disintegration of the entire root system. Plants showing various stages of disease were taken for further study. At various times throughout the summer diseased Crotalaria plants were received from Gainesville from Mr. G. E. Ritchey and a collection of diseased plants of Crotalaria spectabilis Roth from several localities in Florida were sent by Mr. E. F. DeBusk. The latter stated that Crotalaria stands in many places were being seriously depleted. Some of the specimens were quite moldy when they arrived and were of little value but isolations were made from as many of the diseased plants as possible and the fungi obtained were studied. The pathogenicity of the following fungi to Crotalaria intermedia has been proved: Rhizoctonia solani, Rhizoctonia sp., Macrophomina phaseoli, Sclerotium rolfsii, and a strain of Fusarium oxysporum. Other fungi isolated but which did not prove to be pathogenic under the conditions under which the tests were made are Phoma sp., Fusarium solani, and a fungus that forms pycnidia closely resembling those produced by Diaporthe crotalariae Weber. Rhizoctonia solani was isolated most consistently from the younger plants but was not obtained from some lots at all.

The extent of these investigations is too limited to draw any final conclusions but it appears certain that several different fungi are involved in the gradual thinning of these Crotalaria stands. Much more survey work needs to be done to determine the relative importance of these fungi in different localities and from year to year and whether or not still other fungi are involved. The relative susceptibility of the different species of Crotalaria should be determined and resistant plants should be found if possible.

(DIVISION OF FORAGE CROPS AND DISEASES, U. S. BUREAU OF PLANT INDUSTRY).

## INVESTIGATIONS ON SEED TREATMENT OF FORAGE GRASSES AND LEGUMES FOR CONTROL OF DAMPING-OFF [1]

K. W. Kreitlow

In view of the impending shortage of seed stocks of some forage grasses and legumes, a preliminary report on the results of seed-treatment tests conducted at the U. S. Regional Pasture Research Laboratory, State College, Pennsylvania, may be of interest.

The primary purpose of seed-treating agents is protection from soil-borne organisms that cause pre-emergence damping-off. The amount of damping-off of grass and legume seedlings is dependent on the soil and weather conditions that prevail during the period of germination. Usually a cold, wet seed bed is most conducive to widespread damping-off. However, results of nursery tests conducted at different times during the growing season indicate that seed treatment of some grasses and legumes may be beneficial under a wide range of conditions at time of planting.

This suggests the possibility that rate of seeding may be reduced by seed treatment. The realization of such a possibility would be particularly important where seed stocks are inadequate. The amount of seed sown would depend on the benefits derived from treated in comparison with untreated seed. For example, a 10% increase in stand, when treated compared with untreated seed is used, would mean that 10% less of the treated seed would be necessary to produce comparable results.

Preliminary experiments established in the field at 7 different dates during the spring and fall of 1942 show that Sudan grass averaged 12% increase in stand for treated seed. In one test, an increase in stand of 24% resulted when treated seed was used. The dusts Spergon and Semesan gave best results while Du Bay 1205 FF and yellow cuprocide were slightly less beneficial. Tests conducted in a greenhouse with Sudan grass and with known pathogenic cultures of Pythium revealed that the stand was more than doubled by using treated seed.

Field tests conducted on alfalfa revealed that stands were increased 5 to 17% when the seeds were dusted with yellow cuprocide. The average increase in stand for 5 field tests was 8%. Although yellow cuprocide gave the greatest average increase in stand, seeds treated with Spergon or Du Bay 1205 FF were similarly benefited.

When seeds of red clover were treated with Du Bay 1205 FF, an average increase of 9% resulted under field conditions. The greatest increase in stand for any one planting was 12%.

Tests conducted with orchard grass and Kentucky bluegrass showed no increase in stand when treated seeds were planted.

Since all these tests were preliminary, further field and greenhouse experiments are contemplated.

(CONTRIBUTION NO. 46, OF THE U. S. REGIONAL PASTURE RESEARCH LABORATORY, DIVISION OF FORAGE CROPS AND DISEASES, BUREAU OF PLANT INDUSTRY, AGRICULTURAL RESEARCH ADMINISTRATION, U. S. DEPARTMENT OF AGRICULTURE, STATE COLLEGE, PA., IN COOPERATION WITH THE NORTHEASTERN STATES).

## BRIEF NOTES ON PLANT DISEASES

AN UNUSUAL OCCURRENCE OF ROOTKNOT IN CENTRAL IOWA: In July, 1942, an examination of the roots of lettuce in the writer's garden disclosed the knotted appearance of the rootknot disease. Microscopic examination confirmed the presence of the nematode, Heterodera marioni. Further examination of the garden revealed that the soil on one side, previously planted to ornamentals, was infested with the parasite. Chinese cabbage, potatoes, and tomatoes in the infested area were not seriously affected, while the roots of lettuce, beets, and carrots were severely damaged. The carrots were so stunted and mis-shapen that they were of little market value. This unusual occurrence of rootknot in this latitude, where nematodes are rarely found as a garden pest, was probably influenced by the mildness of the preceeding winter and early spring months, in which mean temperatures averaged from 2° to 8°F. above normal. With the exception of the first 2 weeks in January, no long period of intense cold was recorded. (Roger H. Davy, Ames, Iowa).

DOWNY MILDEW ON ONIONS IN TEXAS: In February of 1942, during a disease survey trip through the onion-growing areas in parts of South Texas, with Dr. J. C. Walker of the Wisconsin Agricultural Experiment Station, downy mildew (Peronospora destructor (Berk.) Caspary) was observed in 2 large onion fields, near Laredo. This seems to be the first time that this disease has definitely been found to occur in the State of Texas. Taubenhaus and Mally [1], in describing onion downy mildew, have stated: "The disease was also reported from Texas in 1914. It is doubtful, however, whether this was downy mildew, because the disease is probably not present in that State. The trouble might have been mistaken for tipburn, which is very common and which often follows injury from thrips or pink root." This writer has not been able to trace the authorship of the original report.

The disease was first noted in 1942 in a field of 230 acres of Yellow Bermuda onions, but only a few acres of that field were severely damaged. Another large field, near the first one, also had several small areas infected with the disease. The mildew apparently had developed about 10 days earlier, and previous to that there had been a drizzling rain lasting several days. The most severely affected areas were those lying low in the field. A number of diseased specimens were collected from the 2 fields and the identity of the pathogen was confirmed by microscopic examination. A fresh crop of sporangiophores and sporangia were produced on the leaves after an overnight incubation in a moist chamber. The spread of the mildew seemed to have stopped with the advent of dry weather. Further search was made for the disease at that time, and later in the season, in other sections of the Winter Garden -- in vicinities of Winter Haven, Carrizo Springs, and Crystal City, -- but the disease was not found in these areas. (S. S. Ivanoff, Texas Agricultural Experiment Station, Substation 19, Winter Haven, Texas).

ERGOT ON NATAL GRASS IN FLORIDA: Natal grass (Tricholaena repens (Willd.) Hitchc.), a South African grass introduced into Florida many years ago, is widely distributed and conspicuous in the peninsular portion of the State. It has been used as a cover crop in citrus groves and on pineapple land but has spread as a volunteer plant into old fields, along roadsides, and into dry, open pinelands. It has been singularly free from diseases. The fungus Cerebella andropogonis Ces., reported by Vera K. Charles in the Plant Disease Reporter (Vol. 23: 131. 1939), is the only parasite referred to in literature as attacking this plant in Florida. During the fall of 1942, it was common around Gainesville, Alachua County but it has been collected in previous years in many other localities.

In view of the statements made recently by R. F. Langdon (Phytopath. 32: 613. 1942) in regard to the relationship existing between Cerebella spp. and ergot and the fact that no species of Claviceps had ever been reported on Natal grass, frequent observations were made of the developing inflorescences of the grass in the vicinity of Gainesville, beginning in the summer of 1942. On the 10th of November the conidial stage of an ergot was found in considerable quantity, but it seems very probable that it occurred earlier and was unnoticed because of its small size (about 1 mm.) and the

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1 Taubenhaus, J. J. and Mally, Fred W. The culture and diseases of the onion. E. P. Dutton & Company, 1924.

fact that it is often obscured by the copious hairs on the floral parts of the grass. In some panicles, more than 50% of the spikelets were infected and seed production was evidently much reduced. The fungous growth was most conspicuous as a creamy-yellow, viscous mass at the tip of the second glume and the lemma just after the anthers had withered. In older panicles, much growth of Cerebella was present, sometimes only partially covering the stroma of the Sphacelia. In no case were any sclerotia of the ergot observed. (Erdman West, Florida Agricultural Experiment Station).

A CORRECTION: The report of Albugo sp. on lettuce (Lactuca sativa) in Texas, listed in Supplement 119, p. 219, and in Supplement 120, p. 292; and the report of Albugo occidentalis (Wilson) Sacc. & Trav. on leaf mustard (Brassica juncea) listed in Supplement 135, p. 39, are all incorrect. The fungus in each instance should be Albugo sp. and the host leaf mustard, Brassica juncea, so that the correct statement in all three cases is: Albugo sp. on Brassica juncea (leaf mustard). (S. S. Ivanoff, Texas Agricultural Experiment Station, Substation Number 19, Winter Haven).

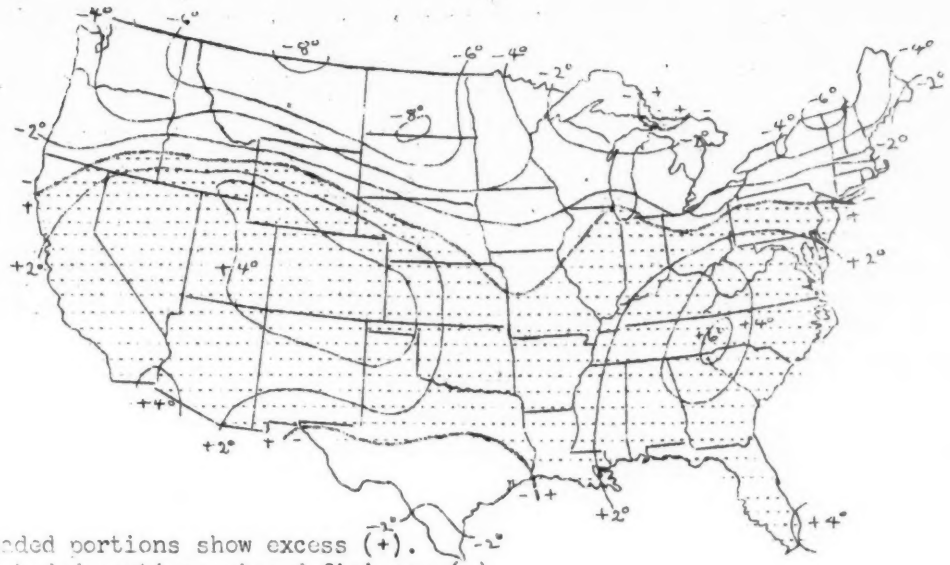
## JANUARY WEATHER

(From U. S. Department of Commerce, Weather Bureau, Weekly Weather and Crop Bulletin for the weeks ending February 2, and February 9, 1943).

The geographic distribution of temperature anomalies for January as a whole was in rather marked contrast to January of last year. This month in 1942 was abnormally warm in northern interior sections between the Lake region and the Ohio Valley on the east and the Rocky Mountains on the west, but was rather cold in Southern States. Fig. 1 shows that January 1943 had below-normal temperatures generally across the northern third of the country from New England to the north Pacific area. In some northern sections where last January was 6° to 12° above normal, the monthly means this year were 4° to 8° subnormal. The southern half of the country, in general, had a warmer-than-normal month, especially the Southeast and a large southwestern area. South of the Potomac and Ohio Rivers the temperatures averaged 2° to 6° warmer than normal and 2° to 4° warmer in central and southern Rocky Mountain areas and most of the Great Basin.

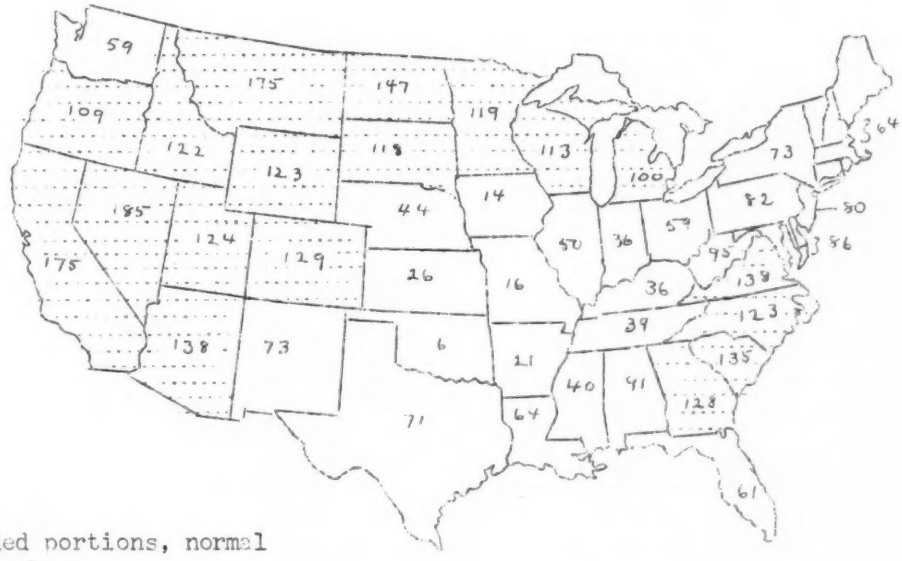
Figure 2 shows the percentage of normal precipitation, by States, for January 1943.

The map for January indicates unusually great contrasts for different parts of the country and also, in many instances, for adjoining States. The outstanding features are extremely heavy rainfall shown for most sections west of the Rocky Mountains and extreme dryness in central interior portions of the country. Nevada and California had the wettest January since 1916, notwithstanding many parts of southern California were extremely dry during much of the month. Montana had more precipitation than has occurred in any January since 1909, while North Dakota was the wettest since 1933. On the other hand, the average precipitation for Oklahoma was only 0.08 inch, making it the driest January of record with the preceding driest having two-and-one-half times as much rain. Missouri, Arkansas, and Iowa also were the driest of record, the latter going back




Shaded portions show excess (+).
Unshaded portions show deficiency (-).
Lines show amount of excess or deficiency.

Fig. 1. -- Departure of Mean Temperature from Normal, January 1943




Shaded portions, normal or above.

Fig. 2. -- Percentage of Normal Precipitation by States, January 1943

for more than 70 years. Kansas has not had such dryness in January since 1928; Indiana since 1934, and Kentucky since 1931.

Another outstanding feature was the marked contrasts for many adjoining States. Examples: In this month precipitation is normally much greater in Washington than in Oregon, but this year the average for the former was 2.91 inches and for the latter 4.44 inches. Again, Minnesota had 119 percent of normal, while adjoining Iowa had only 14 percent; Wyoming 129 percent and Kansas 26 percent; Virginia 138 percent and Kentucky, adjoining on the southwest, 36 percent; Georgia 128 percent, and Florida 61 percent.